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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/708,152	02/11/2004	Tsung-Wei Huang	ACMP0021USA1	2151

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NORTH AMERICA INTERNATIONAL PATENT OFFICE (NAIPC)
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MERRIFIELD, VA 22116

EXAMINER

NGUYEN, TAI V

ART UNIT PAPER NUMBER

3729

DATE MAILED: 07/05/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/708,152

Applicant(s)

HUANG ET AL.

Examiner

Tai Van Nguyen

Art Unit

3729

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 May 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 and 13-15 is/are rejected.
- 7) ☒ Claim(s) 12 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 10/065,609.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/19/04, 2/11/04, 12/16/04
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. In regards to the merits of Chen et al (US 6,471,338) in the previous Office action filed 5/17/2005, the Applicants' arguments that Chen et al patent was not more than a year before the earliest effective US filing date of the instant application have been found to be persuasive.

Accordingly, the previous rejection of Chen et al has been withdrawn.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-6, 8 and 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Cornell et al (US 5, 774,148).

As applied to claims 1-3, Cornell et al disclose a method for fabricating a fluid injection head structure comprising steps of: providing a substrate (34, Fig. 5), forming at least one bubble generator (39) on the substrate, forming at least one functional device, forming a first conductive trace (46), which is composed of the poly-silicon layer (38), and forming a second conductive trace (46), which is used to electrically couple the functional device with the bubble generator, and also serves to couple the functional device with the first conductive trace (see Fig. 5).

As applied to claim 4, Cornell et al disclose forming a dielectric layer between (50) the first conductive trace and the second conductive trace.

As applied to claim 5, Cornell et al disclose functional device is a transistor comprising a source (36, Fig. 5), a drain (35) and a gate (37).

As applied to claim 6, Cornell et al disclose the transistor is a metal oxide semiconductor field effect transistor (MOSFET) (25, Fig. 5), and the gate is composed of a poly-silicon layer (38).

As applied to claim 8, Cornell et al disclose the material of the second conductive trace (52) is any one of aluminum-silicon-copper, and alloys of aluminum-copper (see column 5, lines 30-33).

As applied to claim 14, Cornell et al disclose at least one layer of the functional device is formed on the same poly-silicon layer as the first conductive trace (38, Fig. 5).

As applied to claim 15, Cornell et al disclose the gate of the MOSFET (25, Fig. 5) is formed on the same poly-silicon layer as the first conductive trace (38).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cornell et al in view of Shirai (US 5,422,505).

Regarding to claim 7, Cornell et al as relied upon above disclose all limitations of the claimed invention except the gate and the first conductive trace are formed in a same photo- etching process (PEP).

However, Shirai teaches that the gate and the first conductive trace are formed in a same photo- etching process (PEP) (see column 3, lines 50-56). It would have been obvious to one ordinary skill in the art at this time the invention was made to have modified the Cornell et al method by utilizing forming the gate and the first conductive trace are formed in a same photo- etching process (PEP) as taught by Lee et al, to improve the current driving ability.

6. Claims 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cornell et al in view of Kim et al. (US 6,102,530).

Regarding to claim 9, Cornell et al as relied upon above disclose all limitations of the claimed invention except to eject the fluid from the chamber through the orifice.

However, Kim et al. teach ejecting the fluid from the chamber (14, Fig. 2C) through the orifice (18). It would have been obvious to one ordinary skill in the art at this time the invention was made to have modified the Cornell et al method by including the step of ejecting the fluid from the chamber through the orifice (see column 4, lines 55-61) to improve ejecting liquid from a micro-device.

As applied to claim 10, Kim et al first bubble restricts flow of fluid out of the serves as a virtual valve, restricts flow of fluid out of the chamber (see column 7, lines 5-7).

As applied to claim 11, Kim et al further disclose the step of: forming a dielectric layer on the substrate; etching the substrate and the dielectric layer to form a manifold (16, Fig. 2C) and at least one chamber (14) connected to the manifold such that fluid (26) can flow through the manifold to the chamber; and forming at least one orifice (18) position adjacent for ejecting the fluid (36).

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cornell et al in view of Chen et al and further in view of Hess et al (US 5,122,812).

Regarding to claim 13, Cornell et al as modified of Chen et al, discloses the method substantially as claimed above. However, the modified Cornell et al method does not disclose the fluid is the ink of ink cartridge. Hess et al disclose the fluid is the ink of ink cartridge (see column 8, lines 26-44). It would have been obvious to one of ordinary skill in the art at this time the invention was made to improve the modified Chen et al method utilizing the ink cartridge, as taught by Hess et al, to positively improve degree of production and operating efficiency.

Allowable Subject Matter

8. Claim 12 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

9. Applicant's arguments filed 5/17/2005 have been fully considered but they are not persuasive.

The applicants contend that Cornell et al. does not teach:

A/- "a first conductive trace, which is composed a poly-silicon layer" (as recited in claim 1, lines 6-7); and

B/- Shirai does not teach, "the first conductive trace are formed in a same photo-etching process" (as recited in claim 7, lines 1-2).

The examiner traverses for at least the following reason:

In regards to the merits of Cornell et al, Cornell does indeed teach two separate layers 46, 38. The limitations of "forming a first ... poly-silicon layer" (lines 6-7 of claim 1) does not preclude the "first conductive trace" and "poly-silicon layer" from being read as two separate layers. The examiner's position is that "forming ...layer" (lines 6-7 of claim1) can be read as two separate layers and is not limited to a layer being one in the same. Thus, Cornel satisfies that the "first conductive trace" was read as layer 46 and the "poly-silicon layer" was read as layer 38.

In regards to the merits of Shirai, the process of Shirai form the "gate" and "conductive trace" at the same time in the same photo-etching process to the extent that the gate material is used to form the conductive trace material (noted at col. 3, lines 52+). Whether any poly-silicon material exists in Shirai or not, is insignificant in that, as noted above, the first conductive trace and poly-silicon layer can be read as two separate layers and Shirai was relied upon for the first conductive trace only.

Therefore, the combination of Cornel and Shirai would be obvious to one of ordinary skill in the art.

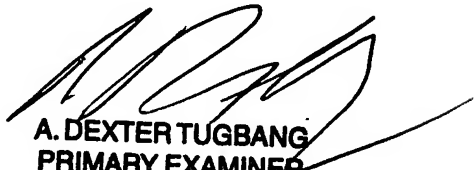
Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tai Van Nguyen whose telephone number is 571-272-4567. The examiner can normally be reached on M-F (7:30 A.M - 4:30 P.M).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 571-272-4690. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


A. DEXTER TUGBANG
PRIMARY EXAMINER

TN.
June 23, 2005